REMARKS/ARGUMENTS

Claims 20, 22-29, 31, and 33-38 are pending in this application. By this amendment, Applicant amends Claims 20 and 31 and adds new Claims 37 and 38.

Support for the features recited in new Claims 37 and 38 is found, for example, in Tables 1 to 7 of Applicant's originally filed specification.

Claims 20, 22, 23, 26, 29, 31, 33, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. (JP 05-204151) in view of Frechet et al. (U.S. 5,648,196). Claims 24 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. in view of Frechet et al., and further in view of Kubota et al. (U.S. 2003/0036020). Claims 25 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. in view of Frechet et al., and further in view of Crary (U.S. 3,661,576). Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. in view of Frechet et al., and further in view of Broers et al. (U.S. 4,557,995). Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. in view of Frechet et al., and further in view of Iguchi et al. (U.S. 6,197,480). Applicant respectfully traverses the rejections of Claims 20, 22-29, 31 and 33-36.

Claim 20 has been amended to recite:

> A method for forming a thick film pattern, comprising the steps of:
> applying to a support a photosensitive paste including a conductive powder, a photosensitive monomer, a photopolymerization initiator, and a polymer, wherein a ratio of the photosensitive monomer to a total amount of the photosensitive monomer and the polymer satisfies the condition represented by the following Formula:
> **photosensitive monomer/(photosensitive monomer + polymer) ≥ 0.90**,
> so as to form a photosensitive paste film;
> subjecting the photosensitive paste film to an exposure treatment; and
> developing the photosensitive paste film subjected to the exposure treatment so as to form a thick film pattern; wherein
> the contents of the conductive powder, the photosensitive

> monomer, and the photopolymerization initiator constituting the photosensitive paste are within the following ranges:
>
> conductive powder: about 60 to about 90 percent by weight of the photosensitive paste;
>
> photosensitive monomer: about 5 to about 39 percent by weight of the photosensitive paste; and
>
> photopolymerization initiator: about 1 to about 10 percent by weight of the photosensitive paste. (emphasis added)

Applicant's Claim 31 recites features that are similar to the features recited in Applicant's Claim 20, including the above-emphasized features.

The Examiner alleged that Ikeda et al. teaches all of the features recited in Applicant's Claims 20 and 31, except for "the photosensitive paste of the instant application." The Examiner further alleged, "It would have been obvious to use such a paste, based on Ikeda's teachings regarding the amounts of each component of the paste." The Examiner acknowledged that the amount of radical generator/photopolymerization initiator of Ikeda et al. is not within the range of the Applicant's invention. However, the Examiner alleged, "it is well-known in the art that by increasing the amount of photopolymerization initiator, the sensitivity of the photopolymerizable composition increases, as evidenced by Frechet et al. (column 12, lines 15-18 and fig. 2). The amount of photopolymerization initiator in a photopolymerizable composition is a result-effective variable, having influence over the sensitivity of the composition and therefore it may be optimized… It would have been obvious to one of ordinary skill in the art at the time of the invention to increase the amount of radical generator/photopolymerization initiator in the composition of Ikeda et al., in order to increase the sensitivity of the conductive paste."

Regarding the feature of "photosensitive monomer/(photosensitive monomer + polymer) $\geq$ 0.86" as recited in Applicant's Claims 20 and 31, the Examiner alleged, "When the photosensitive resin comprises 50 parts binder and 300 parts of polymerizable monomer, the ratio polymerizable monomer/(polymerizable monomer + binder) is approximately 0.86, which meets the limitations of the instant application."

In the Response to Arguments section on pages 9 and 10 of the outstanding Office Action, the Examiner stated:

> On pages 2-4 of the Remarks, the applicant argues that Ikeda et al. do not teach the photosensitive paste of the instant application. On pages 2-3 of the Remarks, the applicant cites par.0029 of Ikeda et al. which shows that the binder polymer should be in amount of 50 parts by weight and the polyfunctional monomer could be in an amount between 10 and 300 parts by weight. If the amount of monomer is over 300 parts by weight, it is difficult to maintain a good viscosity of the paste composition.
>
> The applicant concludes that the maximum value of the radical polymerizable monomer / (radical polymerizable monomer + binder) is 0.857 for the paste of Ikeda et al.
>
> The examiner showed in paragraph 4 of the previous Office Action that a paste comprising 50 parts by weight of binder and 300 parts by weight of monomer has a *ratio* of *the polymerizable monomer/ (polymerizable monomer +binder) of approximately 0.86*.
>
> *The examiner maintains the position that a ratio of 0.857 is approximately 0.86. The ratio of the polymerizable monomer / (polymerizable monomer + binder) of 0.86 meets the limitation of claims 20 and 31 of the instant application*.

Applicant's Claims 20 and 31 has been amended to recite the feature of "photosensitive monomer/(photosensitive monomer + polymer) ≥ 0.90." Support for this feature is found, for example, in Tables 1 to 7 of Applicant's originally filed specification.

As acknowledged by the Examiner, Ikeda et al. teaches a maximum value of the ratio of radical polymerizable monomer / (radical polymerizable monomer + binder) of 0.857 for the paste of Ikeda et al., and certainly fails to teach or suggest that the ratio of radical polymerizable monomer / (radical polymerizable monomer + binder) for the paste of Ikeda et al. could or should have any value greater than 0.857. No one of ordinary skill in the art would or could have possibly fairly construed the values of the ratio of radical polymerizable monomer / (radical polymerizable monomer + binder) of less than or equal to 0.857 as taught by Ikeda et al. as corresponding to the feature of "photosensitive monomer/(photosensitive monomer + polymer) ≥ 0.90" as recited in Applicant's Claims 20 and 31.

Thus, Ikeda et al. clearly fails to teach or suggest the feature of "photosensitive monomer/(photosensitive monomer + polymer) ≥ 0.90" as recited in Applicant's Claims 20 and 31.

In the Response to Arguments section on page 10 of the outstanding Office Action, the Examiner stated:

> On page 3 of the Remarks, the applicant argues that in Ikeda et al. the polymerizable monomer cannot exceed 300 parts by weight so the ration of the polymerizable monomer / (polymerizable monomer + binder) cannot exceed 0.857. The applicant further argues that Ikeda et al. teach away from the feature of a ratio polymerizable monomer / (polymerizable monomer + binder) equal to or greater than 0.86.
>
> **The examiner agrees that Ikeda et al. teach away from an amount of polymerizable monomer of more than 300 parts by weight (par.0029). This is equivalent to Ikeda et al. teaching away from a ratio polymerizable monomer / (polymerizable monomer + binder) *greater than 0.86.*** (emphasis added)

That is, the Examiner explicitly admitted that Ikeda et al. teaches away from a ratio polymerizable monomer / (polymerizable monomer + binder) that is greater than 0.86, and thus, Ikeda et al. most certainly teaches away from the feature of "photosensitive monomer/(photosensitive monomer + polymer) ≥ 0.90" as recited in Applicant's Claims 20 and 31.

The Examiner is reminded that when the prior art teaches away from the claimed solution as presented here, obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition. **Ex Parte Whalen II**, Appeal 2007-4423, July 23, 2008.

Further, if the conductive paste composition of Ikeda et al. was modified such that the amount of the polymerizable monomer exceeded 300 parts by weight, that is, if

the conductive paste composition of Ikeda et al. was modified such that the ratio polymerizable monomer/(polymerizable monomer + binder) exceeded 0.857, then the conductive paste composition would be unsuitable for its intended purpose, because the conductive paste would have a viscosity that would be unsuitable for the paste composition as disclosed in paragraph [0029] of Ikeda et al.

The Examiner is reminded that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) and MPEP § 2143.01.

On page 12 of the Response to Arguments section of the outstanding Office Action, the Examiner correctly noted that Frechet et al. does not specifically disclose the word "cation." However, it is extremely well known to one of ordinary skill in the art that a polymerization that has a beginning reaction that produces an acid is a cation polymerization which is very different from a radical polymerization.

The website, http://www.excite-webtl.jp/world/english/web/?wb_url=http%3A%2F%2Fwww.ushio.co.jp%2Fjp%2Ftechnology%2Ftechnique%2Fcure%2Fcure_03.html&wb_lp=JAEN&wb_dis=2&wb_submit=+%96%7C+%96%F3, clearly shows that a polymerization that has a beginning reaction that produces acid is a cation polymerization. Particularly, the table shown on the website entitled, "Comparison between radical polymerization type and cation polymerization type" clearly shows that the beginning reaction in a cation polymerization produces an acid, whereas the beginning reaction in a radical polymerization produces a radical.

Col. 2, lines 50 and 51 of Frechet et al. disclose, "'photoacid generators', which are compounds which produce acid upon exposure to radiation." That is, although Frechet et al. does not disclose the word "cation," Frechet et al. specifically discloses a polymerization that has a beginning reaction that produces an acid, and thus, necessarily discloses a cation polymerization. In contrast to Frechet et al., Ikeda et al.

discloses a "polyfunctional monomer capable of radical polymerization" (see, for example, the English language Abstract of Ikeda et al.).

On page 13 of the Response to Arguments section of the outstanding Office Action, the Examiner stated, "Frechet et al. teach sulfonium salts (see abstract) and the sulfonium salts are well-known to be used as radical polymerization initiators (see, Hoshi et al. US Pg-Pub 2002/0177074), par.0038). Therefore, one of ordinary skill in the art would have been motivated to apply the teachings regarding the amount of photoinitiators of Frechet et al. for the radical generators functioning as photoinitiators of Ikeda et al." Applicant respectfully disagrees.

Paragraph [0039] of Hoshi et al. discloses, "Specific examples of the onium salt include an iodonium salt, a diazonium salt, a sulfonium salt, and the like. Although these onium salts can also function as an acid generator, they function as a radical polymerization initiator in the present invention since they are used in combination with a (C) radical polymerizing compound described later."

In other words, a complete reading of Hoshi et al. clearly indicates that onium salts function either (1) as acid generators or (2) as radical polymerization initiators **only** when used **in combination with a radical polymerizing compound**. Since Frechet et al. fails to teach or suggest any radical polymerizing compounds or that any radical polymerizing compound could or should be used in combination with the sulfonium salts disclosed therein, one of ordinary skill in the art would have clearly recognized that Frechet et al. discloses only a cation polymerization and definitely does not disclose a radical polymerization.

Frechet et al. fails to teach or suggest anything at all about a polymerization initiator used for radical polymerization or that the polymerization initiator disclosed therein could or should be used for radical polymerization. In fact, the polymerization initiator of Frechet et al. used for cation polymerization is completely unsuitable for use for radical polymerization as taught by Ikeda et al. and would not provide the intended function of initiating radical polymerization.

The Examiner is reminded that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) and MPEP § 2143.01.

Thus, contrary to the Examiner's allegations, it would not have been obvious to modify the conductive paste of Ikeda et al. so as to include an increased amount of photopolymerization initiator as allegedly taught by Frechet et al.

Therefore, Applicant respectfully submits that Ikeda et al. and Frechet et al., applied alone or in combination, fail to teach or suggest the unique combination and arrangement of features recited in Applicant's Claims 20 and 31.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 20 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. in view of Frechet et al.

The Examiner relied upon Kubota et al., Crary, Broers et al., and Iguchi et al. to allegedly cure deficiencies of Ikeda et al. and Frechet et al. However, Kubota et al., Crary, Broers et al., and Iguchi et al. fail to teach or suggest the feature of "photosensitive monomer/(photosensitive monomer + polymer) $\geq$ 0.90" as recited in Applicant's Claims 20 and 31. Thus, Kubota et al., Crary, Broers et al., and Iguchi et al. clearly fail to cure the deficiencies of Ikeda et al. and Frechet et al. described above.

Accordingly, Applicant respectfully submits that Ikeda et al., Frechet et al., Kubota et al., Crary, Broers et al., and Iguchi et al., applied alone or in combination, fail to teach or suggest the unique combination and arrangement of features recited in Applicant's Claims 20 and 31.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claims 20 and 31 allowable. Claims 22-29 and 33-38 depend upon Claims 20 and 31, and are therefore allowable for at least the reasons that Claims 20 and 31 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits

that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicant petitions the Commissioner for a Two-Month Extension of Time, extending to November 22, 2010, the period for response to the outstanding Office Action date June 22, 2010.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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